

# **USEPA Region 2 Draft Interim Policy on Identifying EJ Areas**

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**Part I**

**Prepared by the Interim Policy Subgroup of the  
Region 2 Environmental Justice Work Group**

## **REGION 2 DRAFT INTERIM POLICY ON IDENTIFYING EJ AREAS**

### **Executive Summary**

#### **Purpose and Framework of The Interim Policy**

Region 2 is committed to incorporating Environmental Justice (EJ) in its technical and management decisions and actions. As noted in the Region 2 Environmental Justice Operating Plan, in order to achieve this goal a method is needed for identifying EJ areas in a consistent manner. The Region 2 Draft Interim Policy On Identifying EJ Areas (“Draft IP”) has been developed in accordance with the President’s Executive Order 12898 “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.” It is important for the users of this Draft IP to note that the Agency has not as yet finalized guidance to delineate how Environmental Justice areas or communities may be determined. This is why Region 2 has developed this interim policy. The Region’s program offices need to be able to identify a community or area as an environmental justice community. However, before users can identify EJ areas or issues, it is essential that the users of this Draft IP to understand and become aware of the situations and instances in which environmental justice issues may arise. The following framework language is provided to enable the users to put the Draft IP in proper perspective and context.

First, it is important to note that environmental justice issues often arise in a multi-media and socio-economic context or scenario as opposed to a single medium scenario. For instance, it is more the exception than the norm to have an environmental justice complaint or issue that is limited to a single problem, like a community’s drinking water. This is why the Draft IP provides for analyses of both single and multi-media issues in EJ community identifications.

Environmental justice issues all too often involve a multiplicity of environmental problems which may actually cause or exacerbate existing health problems due to the presence or proximity of more than one contaminant in more than one medium and contributed by more than a single source. However, the users of this Draft IP should also be aware that environmental justice issues frequently involve a community’s perception of health problems caused or exacerbated by a number of environmental problems in or near the community. The perception of the affected community must nevertheless be addressed because the community’s “perception” is also its “reality.”

Communities that bear a disproportionate and adverse burden due to environmental problems that may be characterized as EJ communities are unique and may vary on a case by case basis. However, such communities frequently have similar socio-economic factors and environmental problems in that they are often predominantly minority, and/or communities of color; or predominantly low-income or poor; overburdened or disproportionately and adversely affected by a number of environmental problems such as several toxic release inventory facilities, incinerators, landfills, superfund sites, and waste transfer stations situated in or near such communities; at risk of exposure to contaminants that may be present in the soil, water, and air in such communities; predisposed to and suffer from asthma, emphysema, other respiratory diseases, cancers, and lead-poisoning in school age children. These communities can be in urban or rural areas or on Indian and Indigenous peoples’ lands.

Where the comparison or reference community(ies) do not have these factors or conditions present, a clear disproportionate burden or impact may be assessed. On the other hand, where the comparison or reference community shares some of these factors, the user will have to assess whether or not the differences are significant. If there is no “disproportionate and adverse impact” that community or area cannot be considered as an environmental justice area or community.

Second, while environmental justice and Title VI issues are related because Title VI administrative complaints have increasingly been filed to address environmental justice concerns, it is important for the users of this guidance to note that environmental justice and Title VI claims are quite distinct. The major difference is Title VI of the 1964 Civil Rights Act is a statute or law; whereas, the President’s Executive Order on Environmental Justice is not. While, Executive Order 12898 does not have the effect of law on the States and is only applicable to federal agencies that are involved with the public’s health and the environment, the President has mandated all federal agencies bound by the Executive Order to comply with it. The Agency’s perspective is that achieving environmental justice is the objective and Title VI is one of the tools affected communities have used to achieve that goal. Environmental Justice is an Agency priority and important policy consideration.

Third it is important to note that the major tenet of environmental justice is the fair treatment and meaningful involvement of the affected community in carrying out the Agency’s and the Region’s programs, policies and activities. Fair treatment and meaningful involvement should not be understood to mean preferential treatment for certain communities. Rather, these principles should be understood to mean the Agency and Region will continue to provide equal protection and access to information to all communities we serve. Fair treatment and meaningful involvement may include but not be limited to ensuring to the extent possible and practicable the following:

- that notices about public meetings are disseminated in local media used by the community, and that such notices are translated into appropriate languages other than English if a community is largely non-English speaking;
- that environmental laws are enforced equally in all communities (some communities have the perception that EPA does not enforce environmental laws equally, by helping communities understand how to bring environmental problems to the Region’s attention, and by sharing data and information, the Region will be able to dispel such perceptions);
- that Regional managers and staff understand and are aware of cultural differences and unique dependence some communities such as tribal nations and indigenous peoples have upon their land for subsistence fishing and hunting;
- that to the extent possible the members of the affected community have a seat at the table or are involved in the decision-making the Region undertakes to address an EJ community’s problems;
- that communities have access to accurate, timely and reliable information.

Finally, it is important to note that the Draft IP does not determine what, if any, actions the program offices should take after a community has been assessed or evaluated as an environmental justice community or area. This is the case because it is expected that the program offices should consider environmental justice and incorporate it into the programs' every day activities. That is to say that once the EJ analysis is conducted, the program should be able to utilize its routine procedures, tools, standard operating procedures or protocols, laws, and or regulations to carry out response actions deemed to be appropriate and protective of human health and the environment to address the community's concerns.

Until the Agency issues final guidance in this area, the Region believes the Draft IP will enable EPA Region 2 to effectively and fairly carry out its Environmental Justice Program Initiative in accordance with the President's Executive Order.

### **Scope of The Interim Policy**

This Interim Policy is designed to be scientifically valid, objective, and understandable. It encompasses both community and automated data system input, and will result in informed decisions that are defensible. Environmental Justice, as described in Executive Order 12898, entails taking steps to prevent "disproportionately high and adverse human health or environmental effects...on minority populations and low-income populations". There are two approaches to use when identification of EJ areas is required:

- general screening of large areas (e.g., identifying potential EJ areas in a state), and
- addressing site-specific cases (e.g., assessing whether or not the area in which a facility is planned to be located is an EJ area).

In this policy, general screening for identifying potential EJ areas involves comparing the minority and income characteristics of smaller geographic areas with those of a larger reference area that includes all of the smaller areas. Screening is usually performed to provide a basis for targeting inspections or more detailed site-specific analyses, in which more careful selection of reference areas and analysis of environmental burden are also considered.

For determining whether or not site-specific cases involve EJ areas, this policy uses the following steps: 1) delineate the community of concern (COC); 2) identify reference communities for comparison with the community of concern; 3) collect the minority and income data for the COC and reference communities; 4) determine if the community is either minority or low income in comparison to the reference communities; 5) for communities that meet the demographic criteria develop an environmental load profile for the COC and reference communities; 6) assess if the burden is disproportionate and adverse; and 7) Once an area is assessed to be an EJ area, subsequent Agency actions would be in accordance with established laws, regulations, and policies, assess whether the community of concern is an EJ area, in relation to the reference communities.

## **Use of The Interim Policy**

The steps listed above are described in more detail in the Interim Policy itself. In order to use the policy, staff are directed to the companion resource document, “Implementation Guidance to the Interim Region 2 Policy on Identifying EJ Areas.” Upon completion of the steps, staff will present an EJ assessment proposal to their management, stating whether or not the area under consideration would be an EJ area. The proposal will be accompanied by descriptions of how the areas were selected, the results of the minority, low-income, and environmental load profile analyses and how they were made.

## **Organization of the Draft Interim Policy Document**

The Draft Interim Policy Document is organized in three parts. Part I is the actual Policy itself. It contains the framework, purpose, scope, approach or concept and methodologies that EPA Region 2 will utilize to identify EJ areas.

Part II is the Implementation Guidance. It is divided into three sub-parts and is a companion to the Draft Interim Policy. It repeats definitions and policy statements, and expands somewhat the information contained in the Interim Policy and provides considerably more detail on how to carry out the process. In addition, it provides all of the terms, definitions, methodologies, and guidance needed for identifying potential and actual EJ areas in Region 2.

Part III is the Appendices and contains comprehensive references, informational data, charts, tables and tools that may be referred to by the readers and users of the Draft Interim Policy. The Appendices also documents some of the studies and literature EPA Region 2 relied upon in development of the Draft Interim Policy.

## **Peer Review of the Region 2 Draft Interim Policy**

The Region conducted a peer review of the Draft interim Policy. The Region used internal EPA and external peer reviewers. The peer reviewers were Dr. Clarice Gaylord, former Director of EPA’s Office of Environmental Justice, now with EPA Region 9’s San Diego Border Office; Charles Lee, then Director of Research and Environmental Justice with the United Church of Christ, and now an Associate Director with EPA’s Office of Environmental Justice; Catherine Fox, formerly with EPA’s Office of Enforcement and Compliance Assistance (OECA), and now with EPA Region 4; Dr. Michael Gelobter, of Rutgers University Graduate School of Public Policy and founder of the Community and University Consortium for Regional Environmental Justice (CUCREJ); and Loren Hall, formerly of EPA’s Office of Pollution Prevention and Toxics Substances (OPPTS) and now with EPA’s Office of Civil Rights.

Dr. Gelobter was unable to provide written comments. His oral comments were received after close of the deadline for submission of comments by the peer reviewers. Loren Hall was unable to provide comments due to extenuating circumstances. EPA Region 2’s responsiveness summary to the peer reviewers’ comments may be made available upon request.

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## **Interim Regional Policy on Identification of EJ Areas**

### **a. Introduction**

This Regional Interim Policy on the Identification of Environmental Justice (EJ) Areas (hereinafter, “the Interim Policy”) defines and describes the process to be utilized in U.S. EPA Region 2 for determining whether a specific area is subject to the Agency’s EJ Program. The Glossary at the end contains definitions for many of the terms used throughout this Interim Policy. This document is termed an Interim Policy in recognition of the fact that a national policy may be developed and implemented in the future.

### **b. Environmental Justice Terms and Definitions**

The Interim Policy is an outgrowth of Executive Order 12898, issued on February 11, 1994, which directed each Federal agency to:

make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental burdens of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico and the Commonwealth of the Mariana Islands.

This Interim Policy uses the term “minority” rather than “people of color” in order to be consistent with the Executive Order, but the Region is mindful and supportive of many communities’ desire to be identified as “people of color.” The Interim Policy uses the term “American Indian” in referring to all indigenous populations within the Region, regardless of their affiliation with a federally-recognized Tribe, but recognizes various terminology preferences and will strive to respect and utilize appropriate language on a case-by-case basis.

EPA Region 2 uses the terms “EJ Area” or “EJ Community” to describe a community that satisfies the terms of the Executive Order and the accompanying definitions. In addition, the terms related to ‘Adverse Environmental Burden’ are frequently shortened to ‘Burden’ or ‘Disproportionate Burden,’ but the modifiers ‘Adverse’ and ‘Environmental’ are always implied.

### **c. The Process**

The steps for identifying and screening EJ areas center on the comparison of three factors between the Community of Concern and one or more reference communities: their respective levels of minority representation, low-income representation, and environmental burden. Decision-criteria offer guidelines for determining whether the levels in the Community of Concern are significantly greater for

- minority and/or low-income, and
- environmental burden.

This Interim Policy specifies a procedure for making EJ assessments in a consistent and defensible way. It offers a standard methodology for evaluating demographic and burden data. It provides flexibility for how decision-makers weigh burden data given the unique situation of a COC.

The Decision-criteria specified below are expected to apply to most Region 2 EJ assessments. For the purpose of this evaluation, the US. Census results will be used to determine if a COC meets the minority and low income criteria established in this document. However, there will be certain situations in which the sole reliance on Census data is not appropriate. These special demographic considerations are extraordinary circumstances or exceptions to the prescribed methodology. A “special demographic” consideration, for example, may involve a Community of Concern that is indistinguishable from its neighbors or reference communities with respect to one of the demographic factors. Another “special demographic” consideration may involve a Community of Concern that has a significantly greater percentage of a particular minority group than the reference communities, even though the overall minority population in the Community of Concern may not be greater than that in the reference communities.

Because of the complexity in reporting income status, it may be necessary in a limited number of cases to calculate an area’s income status in other ways (e.g., unemployment, or labor demographics, and/or level of education), and to look at the results together in a group. A clear consensus would lead to the conclusion that the low-income criteria are satisfied. Anything less than a consensus, or data available for only one or two calculations, would reduce the confidence in any conclusion concerning the low-income.

There are two approaches for identifying EJ areas:

- Screening analyses to identify potential EJ areas that warrant further study.
- Site-specific analyses to identify an EJ community and address its concerns.

EJ screening analyses are based on the consideration of demographic data, and do not require assessment of disproportionate and adverse burden. Screening analyses address the demographic characteristics of smaller geographical units within a larger reference area, such as census blocks or municipalities within a county or even within a state. Screening studies may utilize Geographic Information Systems (GIS), such as the Region 2 OPM Environmental Justice GIS, or an alternative approach such as the census centroid pull technique (see the Glossary for definitions of less common terms, such as these). In either case, the focus of a screening analysis is on comparison of the demographic characteristics of discreet geographical areas of concern to a single reference area that encompasses all of the areas of concern.

Site-specific-analyses will necessarily be more in-depth than screening analyses because a number of potentially difficult assessments must be made along the way. First, specific reference areas must be selected, their boundaries delineated, and their demographic data collected. Then, an environmental load profile must be developed for a detailed analysis of the environmental burden in the Community of Concern and reference communities in order to assess whether the burden is disproportionate and adverse in the Community of Concern.

The central focus of an EJ assessment will always be the comparison between the Community of Concern and the reference areas to determine if the EJ factors are significantly greater in the Community of Concern. But what constitutes “significantly greater?” The Region 2 Draft Interim Policy specifies Decision-criteria that are to be used as guidelines for answering this question for low income and minority assessment. Due to the complexity in evaluating



environmental burden, criteria constituting “significantly disproportionate” have not been defined. Given the variability in environmental impacts to a community, this policy advocates using a consistent methodology to assess various elements that contribute to burden, with flexibility for decision-makers to determine appropriate weighting based on community characteristics.

#### **d. Summary of the Decision-Criteria**

This Section of the Draft Interim Policy describes the Decision-criteria that integrate the demographic data on minority and/or low-income populations and development of environmental load profiles to assess whether the burden is disproportionate and adverse in order to identify EJ communities. The Community of Concern is compared with each Reference Area for each EJ factor. If the population in the Community of Concern is significantly higher in minority residents and/or low-income residents, and suffers from a significantly greater environmental burden as indicated by the environmental load profile, it is an EJ Community. These Decision-criteria specify how much greater the particular characteristic must be in the Community of Concern in order for that characteristic to be judged “significantly greater” with respect to demographic features. An underlying assumption to all of the Decision-criteria that follow is that the Region will use the data sources and techniques outlined in the Interim Policy when they are available, including quantitative comparisons of the demographic characteristics of the Community of Concern and the reference communities.

A clear majority of EJ researchers across the country identified populations as low-income or minority, when the percent differences were greater than the cut-offs specified in the guidelines that follow. As such, these Decision-criteria are conservative when compared with those research results.

#### **i. Decision-Criterion for the Minority Factor**

The assessment of whether a community is minority will be based on a comparison of the Community of Concern with one or more reference communities, utilizing the same analytical methodology for each. For EJ purposes, a minority community is defined as one in which the percentage of minority residents is significantly greater than the comparable percentage in the reference community, after accounting for the accepted uncertainty in the data. The following guideline is used for this determination:

- If the relative difference in the minority percentages between the Community of Concern and the reference communities is greater than 25%, then the percentage of minority residents in the Community of Concern IS significantly greater than in the reference areas.
- For example, a population that is 62% minority would be 55% greater than a reference population that is 40% minority (40% plus 55% of 40%). The percentage of minority residents in this Community of Concern IS significantly greater than in the reference areas.

## **ii. Decision-criterion for Low-Income Factor**

The assessment of whether a community is low-income will similarly be based on a comparison of the Community of Concern with one or more reference communities, utilizing the same analytical methodology for each. For EJ purposes, a low-income community is defined as one for which the percentage of household incomes beneath the poverty level specified by the Department of Health and Human Services is significantly greater in the Community of Concern than in the reference community, after accounting for the accepted uncertainty in the data. The following guideline is used for this assessment:

- If the relative difference in the low-income percentages between the Community of Concern and the reference communities is greater than 25%, then the percentage of low-income residents in the Community of Concern IS significantly greater than in the reference areas.
- For example, a population that is 59% low-income would be 31% greater than a reference population that is 45% low-income (45% plus 31% of 45%). The low-income population in this Community of Concern IS significantly greater than in the reference areas.

## **iii. Decision-criteria for Disproportionate Burden Factor**

The assessment of whether a community suffers from a disproportionate and adverse environmental burden will be based on a comparison of the Community of Concern with one or more reference communities, utilizing the same analytical methodology for each. Frequently, a community will have highlighted one or more specific environmental concerns. These should be included in the burden analysis to the extent data and methodologies are available to evaluate such concerns. However, the analysis should also include other potential burdens, covering the various possible exposure routes, as well as other potential contaminants or burden types. An analysis should be performed for each environmental burden that is identified.

In order to determine the relative levels of environmental burden in the Community of Concern and in the reference communities, this Interim Policy specifies procedures for estimating the burden in various scenarios by developing an environmental load profile, which serves as an indicator of burden. It then presents specific cut-offs for determining whether the any individual element in the load profile for a Community of Concern is significantly greater than in the reference communities. There may well be situations in which the Community of Concern does not have a specific significantly disproportionate and adverse burden, but may have a number of burdens that, together, represent a significantly disproportionate and adverse environmental burden. For that reason the environmental load profile looks at a number of salient characteristics that relate to the environmental burden on a community. The Interim Policy provides flexibility to the staff conducting the analysis to make reasonable judgements about the appropriate weights of the various elements of the load profile for making the final environmental burden assessment. To the extent practicable, such weights should be decided in advance of the full analysis.

### **iii(a) Environmental Load Profile**

With this in mind, the environmental load profile looks at multiple contributing sources to assess whether a community is defined as suffering from a disproportionate and adverse environmental burden. These elements of burden include (i) some known and quantifiable environmental condition, (ii) the relative magnitude of the burden given the population potentially exposed and (iii) some burden due to proximity to a source of contamination or environmental threat.

Within each of these elements, it is necessary to estimate the specific contribution to burden, which in turn can take many different forms, each with its own measurement problems. Some burdens may be clear and relatively easier to estimate, such as chemical exposures or population proximate to potential sources. Some may be much more subjective, such as perceived odors or indirect effects (like traffic associated with a new source). These perceived or indirect burdens are no less real, they are just much harder to quantify. In addition, some burdens may not exist currently, but may be ‘expected,’ based on proposed construction, siting, etc.

Since methodologies to quantify actual burden are currently not available, the Interim Policy adopts the concept of developing an environmental load profile for a community. The Executive Order governing EJ, addresses situations where minority or low income communities bear a “significantly disproportionate and adverse burden”. To assess whether a community meets the EO requirements EPA needs to characterize the relative burden, not the actual burden, and decide if it is disproportionate and adverse.

The Interim Policy advances the concept of an environmental load profile, which is comprised of different elements that when combined will be indicative of relative environmental burden. The profile would provide a representation of the environmental load in the community, not the actual burden. It would be based on salient characteristics or elements that would serve as indicators of environmental burden and could provide a consistent basis for comparison. The profiles can be compared and the salient characteristics (e.g., indicators of air quality and environmental well being) could be weighed by decision-makers to assist in the assessment of whether the COC is an EJ community.

Although this Interim Policy outlines mechanisms for analyzing environmental data for the purpose of determining particular environmental load characteristics, it does not attempt to determine appropriate weights for these characteristics (e.g., should air emission analysis be given a greater weight than facility and population density characteristics?). Flexibility should be provided to decision-makers with respect to how to use the information from the load profile.

As previously discussed above, decision criteria have not been developed by EPA for quantifying burden that is “significantly disproportionate.” However, the Region has developed decision-criteria, and cut-offs to quantify whether burden for the individual elements of the environmental load profile are significant, and that when combined provide the Region with a method for comparing whether the burden is also disproportionate.

- For example, if the relative difference between the COC and the reference communities for an environmental load element (e.g., air quality indicator) is greater than 50%, then the component of the burden associated with that indicator IS significant when compared to the reference communities.
- On the other hand, a population that is exposed to 52 ppm for some pollutant would have a 30% increase in burden than a reference population that experiences an airborne concentration of 40 ppm (40 ppm plus 30% of 40 ppm). The relative burden in Community of Concern is NOT significantly disproportionate.

Notwithstanding that one or more elements of the load profile may be significant when the COC is compared to reference community(ies), the assessment of whether this constitutes “significantly disproportionate” would depend on a comparative evaluation of all of the various load profile elements. As discussed above, this comparative evaluation would include the appropriate weighting of the individual load profile elements.

The Executive Order also directs federal agencies to prevent and address significant environmental effects that are both disproportionately high and adverse. This Draft Interim Policy also provides criteria for assessing “adverse”. If the burden in the COC is considered by a recognized authority to be safe, then it would not be considered to be adverse, even if it is greater than the burden in the reference community. When an acknowledged health/welfare standard exists for the burden of concern (for example, an EPA National Ambient Air Quality Standard), this Draft Interim Policy defines the burden as disproportionate and adverse only if the burden exceeds that standard and exceeds the cut-offs set forth in the Policy. However, this may not be the case when there are several environmental burdens or multiple environmental problems underlying the environmental justice concern.

#### **e. Steps for Screening and Identifying EJ Communities (Communities)**

The seven steps described below include specific guidance for implementing the Interim Policy, along with appropriate flexibility. All seven steps are required for an identification of an EJ Community. However, only Steps 1 through 4, are required for a typical screening analysis, since environmental burden is not considered. This compilation of the seven steps is intended as a checklist, to ensure that the process is implemented properly.

##### **Step 1: Define the Community of Concern**

The geographic boundaries of the Community of Concern must be carefully defined and characterized, and the demographic characteristics within the defined boundaries obtained.

##### **Step 2: Define the Reference Areas**

Reference (comparison) areas must be defined and their demographics obtained, to provide a context for interpretation of data from the Community of Concern. For site-specific analyses, characteristics of the reference areas should be similar to or in some way parallel to the characteristics of the Community of Concern. Key characteristics of the Community of Concern will be determined by the government action being contemplated (e.g., permitting a facility). For the screening approach, the reference areas are usually a large area, such as a state, that encompasses a number of possible Communities of Concern.

### **Steps 3 & 4: Evaluate Minority and Income Data**

Using the U.S. Census, evaluate minority and income data. These data will generally be evaluated using Region II's GIS application for evaluation EJ demographics. Once all of the data have been evaluated, compare the demographic results for the Community of Concern with those from the reference areas. Proceed with this comparison according to the Decision-criteria for each EJ factor.

### **Step 5. Develop the Environmental Load Profile**

For communities that meet either demographic criterion, environmental load profiles must be developed for the Community of Concern and for the reference areas before they can be compared to assess whether the burden is adverse and disproportionate and adverse in the Community of Concern. The profile will be developed using standardized methodologies with data sets that are available for the entire Region. These methodologies will often be GIS-based tools.

### **Step 6. Evaluation of the Environmental Load Profile**

Once the burden data for the environmental load profile have been collected, it is necessary to evaluate them in detail in order to put the information in a form that can be compared logically from one area to another. Assess whether the burden is adverse using the Decision-criteria in this Draft Interim Policy. Assess proportionality by comparing the environmental load profiles of the Community of Concern and reference communities.

### **Step 7. Apply the Decision-Criteria**

At this step, all of the data have been evaluated. The demographic and environmental burden results, from the environmental load profiles, for the Community of Concern have been compared with those from the reference areas. This comparison should be conducted according to the Decision-criteria for each EJ factor. Then, combine the results to produce a single document, including all of the appropriate supporting documentation and the assessment of whether:

the Community of Concern has a significantly greater minority and/or low-income population than the reference areas, and

the Community of Concern suffers from a disproportionate and adverse environmental burden.

In other words, assess whether the Community of Concern is an EJ Community.

**f. Requirements for Documenting Decisions and Deviations.**

The Draft Interim Policy contains requirements, specifying how the EJ assessment decisions are to be documented as provided below. The decision document must state as appropriate:

- i. Boundaries of the Community of Concern, and how they were selected.
- ii. Boundaries of each reference area and how the reference areas and the boundaries were selected.
- iii. For each factor (minority, low income and environmental burden) the quantitative analyses that were performed and the results of those analyses.
- iv. For each factor, how the Decision-criterion was applied for each community of concern-reference comparison and the result of the comparison.
- v. The conclusion of the analysis, incorporating all three factors, or any Special Considerations.

## **GLOSSARY**

### **Adverse Environmental Burden**

A harmful environmental burden. When there is an acknowledged health or welfare standard for the burden in question, the burden is adverse only when it exceeds that standard. When there is no standard, the decision is more subjective.

### **Aesthetic Effect**

An environmental effect based on desirability in appearance, taste or odor, but not associated with adverse impacts on health or welfare.

### **AFS**

USEPA AIRS Facility Subsystem

### **Agent**

The substance that is responsible for an impact on health or welfare.

### **Aggregation**

Grouping of several discrete sets of data, such as combining populations across several sub-areas.

### **AIRS**

USEPA Aerometric Information Retrieval System, the database containing the Agency's air-related data.

### **Ambient Condition**

The meteorologic or atmospheric state in a specific location.

### **American Indian**

All indigenous populations within the Region, regardless of their affiliation with a federally-recognized Tribe.

### **Bias**

A systematic or subjective distortion of statistics as a result of the sampling procedure or interpretation.

### **Block**

Census blocks are small areas bounded on all sides by visible features such as streets, roads, streams, and railroad tracks, and by invisible boundaries such as city, town, township, and county limits, property lines, and short, imaginary extensions of streets and roads.

### **Block Group**

A unit for census data reporting formed by a cluster of census blocks. Census block groups generally contain between 250 and 550 housing units.

### **Boundary**

A limiting or bounding line between two or more geographical areas.

### **CD-ROM**

Compact Disc - Read Only Memory

### **CENDATA**

U.S. Census Bureau online database

### **Census**

An official enumeration of the population, with details as to race, age,

gender, income, etc.

<b>Centroid Pull</b>	A procedure for grouping census data; all data units (such as block groups) with centroids (geometric centers) that fall within a defined radius from a central point are included in the analysis.
<b>CERCLIS</b>	Comprehensive Environmental Response, Compensation and Liability Information System, a database containing information on Superfund sites.
<b>Chi-square</b>	A statistical test for determining the mathematical fit of a frequency curve to an observed frequency distribution.
<b>Community Input</b>	Information provided by representatives of an affected community on neighborhood boundaries, health concerns, etc.
<b>Community of Concern</b>	A community that is the subject of an Environmental Justice analysis.
<b>Confidence Interval</b>	A range of values for a specific parameter that is believed, with a preassigned degree of confidence, to include the true value.
<b>Contiguous</b>	Bordering or adjoining (as in a neighboring community).
<b>Criteria</b>	Established standards for environmental contaminants.
<b>Cumulative Exposure</b>	Total exposure to environmental contaminants, including exposures originating from multiple sources.
<b>Data Layer</b>	An input parameter for a geographic information system (GIS) analysis covering the area of concern. Information about topography, roads, population, industry, or pollution might all be separate data layers that may be combined in a GIS analysis to present a useful picture of the area on a single map.
<b>Data Transformation</b>	The process of converting data into a format that is more readily used in an analysis. May include conversion into percentages or intervals, or use of the data to generate summary statistics, such as the mean or median.
<b>Decennial Census</b>	The 10-year official counting of the U.S. population, with details as to gender, age, income, etc.
<b>Decision-Criterion</b>	An established test used for determining whether a Community of Concern meets a specific EJ factor (such as low income, minority etc.).
<b>Demographic</b>	The statistical data of a population, especially regarding race, ethnicity, gender, income, etc.



**Difference of Means Test**

A statistical test designed to determine whether the average values of two data sets are significantly different.

**Dispersion**

Spreading widely; scattering or sending off in a variety of directions and distances.

**Disproportionate Burden**

Disproportionate Environmental Burden

**Disproportionate and Adverse Environmental Burden**

The adverse human health or environmental effect on a particular community or segment of the population (the Community of Concern) that is out of proportion to the level of the same effect felt in reference communities. The burden can be related to a specific source or sources, resulting from cumulative or area-wide sources, and/or resulting from uneven application of government authorities.

**Effective Relative Income**

A ratio representing the comparative annual wages of two or more populations.

**EJ**

Environmental Justice

**EJ Area**

A minority and/or low income area suffering a disproportionate and adverse environmental burden as a result of the unfair or unequal development, implementation, or enforcement of environmental laws, regulations or policies (the same as an EJ Community or EJ Population).

**EJ Community**

A minority and/or low income community suffering a disproportionate and adverse environmental burden as a result of the unfair or unequal development, implementation, or enforcement of environmental laws, regulations or policies (the same as an EJ Area or EJ Population).

**EJ Assessment**

Use of this Interim Policy to evaluate whether a specific community in EPA Region 2 is an EJ Area.

**EJ Population**

A minority and/or low income community suffering a disproportionate and adverse environmental burden as a result of the unfair or unequal development, implementation, or enforcement of environmental laws, regulations or policies (the same as an EJ Area or EJ Community).

**EML**

USEPA Exposure Models Library

<b>Environmental Burden</b>	The adverse human health or environmental effect on a particular community or segment of the population related to a specific source or sources, resulting from cumulative or area-wide sources, and/or resulting from uneven application of government authorities.
<b>Environmental Impact</b>	Environmental Burden or effect.
<b>Environmental Justice</b>	The fair treatment and meaningful involvement of all people regardless of race, color, national origin, culture, or income with respect to the development, implementation, enforcement and compliance of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local and tribal programs and policies.
<b>Environmental Load Profile</b>	A representation of the environmental load in a community, which is based on salient characteristics or elements that serve as indicators of environmental burden and provide a consistent basis for comparison.
<b>EO</b>	Executive Order 12898 “Federal Actions To Address Environmental Justice In Minority Populations and Low-Income Populations,” issued by President William J. Clinton on February 11, 1994.
<b>Ethnic Group</b>	A group of people of the same race or nationality who share a common and distinctive culture.
<b>Eutrophication</b>	An increase of mineral and organic nutrients in a body of water, resulting in a reduction of dissolved oxygen and creation of an environment that favors plant over animal life.
<b>Exposure</b>	Subject to the action or influence of environmental contaminants through ingestion, inhalation, or skin contact.
<b>Extraction</b>	To collect information from a database, such as the U.S. Census.
<b>Facility</b>	A factory, plant, industry, utility, or commercial establishment that is a potential source of environmental contamination or degradation.
<b>Federal Register</b>	Publication of the U.S. Government listing government announcements, rules and regulations.
<b>FRDS</b>	Federal Reporting Data System
<b>Geographic Information System</b>	

An organized computer system designed to efficiently capture, analyze and display forms of geographically referenced information. Commonly, GIS is used to combine various data layers (for example, population demographics and environmental burden) to produce maps that display the layers together, allowing for convenient visual analysis.

**GIS** Geographic Information System

**Government Authority** A local, state, or federal governing body that has the authority to act in environmental matters.

**Government Intervention**

Judgements, actions or commands taken by a local, state, or federal governing body to address a specific environmental issue.

**HHS** U.S. Department of Health and Human Services

**Hispanic** Persons who classify themselves as Mexican, Puerto Rican, or Cuban, as well as those who indicate that they are of other Spanish/Hispanic origin.

**Housing Value** A data category in the U.S. Census that represents the attributed worth of the homes in a designated area; often used as a surrogate for income in demographic analyses.

**HUD** U.S. Department of Housing and Urban Development

**Hydrogeology** The science that deals with the occurrence, circulation, distribution, and properties of the water of the earth and the earth's atmosphere.

**IMES** Integrated Model Evaluation System

**Indexes** Numbers or formulae expressing some property, ratio, etc. or used to characterize a set of data in a simplified manner.

**Infectious** Communicable by infection, as from one person to another.

**IPS** Interim Policy Subgroup of the Region 2 Environmental Justice Workgroup

**Large Quantity Generator**

A facility that produces greater than a threshold quantity of a substance annually (i.e., greater than 1000 pounds of a specific chemical substance).

**Level of Confidence** A measure of the degree of certainty in a statistical conclusion.

**Low-Income** Having an annual income that is less than a pre-assigned cut-off. The Interim Policy utilizes the U.S. Department of Health and Human Services poverty guideline as the cut-off.

**Low-Income Community**

A community that has a significantly greater population of low-income families than does a reference community.

**Mainframe**

The device within a large computer that contains the central control and arithmetic units.

**Mean**

The average value of a group of values.

**Median**

The middle number in a given sequence of numbers.

**Microdata Sample File**

A database from the U.S. Department of Census that includes records for unidentified individuals, households and housing units.

**Minority**

An individual or group of individuals that are Hispanic, Asian-American and Pacific Islander, African-American, American-Indian or Alaskan Native. (For EJ purposes, the term 'minority' does not address religion or national origin. It also does not include people who might be distinguished by sex, age or any type of handicap).

**Minority Community**

A community that has a significantly greater population of minority individuals than does a reference community.

**Mode**

The observation in a distribution that occurs with the greatest frequency.

**Multi-variate Analysis**

Statistical analysis of the probability distributions of two or more discrete random variables.

**NEPA**

National Environmental Policy Act

**NPL**

National Priorities List

**NYSDOH**

New York State Department of Health

**OEJ**

USEPA Office of Environmental Justice

**PCS**

USEPA Permit Compliance System, a database of water dischargers.

**Percentage**

A rate or proportion per hundred.

**Percent Poverty**

The percentage of household incomes in a community that fall beneath the poverty line specified by the Department of Health and Human Services.

**Political Boundary**

The line dividing two areas with separate governing bodies, i.e., cities, counties or states.

**Population Density**

The number of people contained within a defined unit area, i.e., persons

per square mile.

<b>Proportion</b>	The comparative relation between things or magnitudes; ratio.
<b>Proximate</b>	Adjacent, or very near to.
<b>Quartile</b>	In a statistical frequency distribution, one of the values of a variable that divides the distribution into four groups having equal frequencies.
<b>Quintile</b>	In a statistical frequency distribution, one of the values of a variable that divides the distribution into five groups having equal frequencies.
<b>Racial Group</b>	A group of persons related by common descent, blood, or heredity.
<b>Range</b>	The difference between the smallest and largest values in a statistical distribution.
<b>Raw Data</b>	Data that have not been transformed or manipulated in any way.
<b>RCRA</b>	Resource Conservation and Recovery Act
<b>RCRIS</b>	USEPA Resource Conservation and Recovery Information System
<b>Reference Community</b>	A community or area selected for comparison with a previously identified community (the Community of Concern) for determining whether the Community of Concern is out of the norm with respect to demographics or environmental burden.
<b>Regression Analysis</b>	A statistical method used to estimate the value of a variable from a knowledge of the values of one or more other variables, and the measurement of the errors involved in this estimation procedure.
<b>Regulatory Effect</b>	A potential form of environmental injustice characterized by bias in the administration of government programs.
<b>Robustness</b>	In referring to a statistical test or measure, describes the test's lack of sensitivity to non-normality in the data being analyzed.
<b>Screening Analysis</b>	An initial geographical and demographical analysis for identifying potential Environmental Justice areas or sites that may pose Environmental Justice concerns.
<b>Sensitivity Analysis</b>	A statistical procedure conducted to identify the factors in an analysis that have the greatest bearing on the outcome.
<b>Site-Specific Analysis</b>	An analysis intended to assess whether a specific identified site or area (the Community of Concern) is an Environmental Justice area or poses Environmental Justice concerns.

<b>Skewness</b>	Asymmetry in a frequency distribution.
<b>Source</b>	The site or facility from which a particular suite of environmental contaminants originate (i.e., factory, incinerator, etc.).
<b>Standard Deviation</b>	A measure of the dispersion of the data in a frequency distribution.
<b>Statistical Correlation</b>	A mutual and reciprocal relationship between two or more data elements.
<b>STF</b>	US Department of Census Summary Tape Files. The STF files are a commonly-used source of demographic information for EJ analyses.
<b>STORET</b>	USEPA Storage and Retrieval of Water-Related Data System
<b>Summary Tape File</b>	Detailed files containing data from the U.S. Census.
<b>Summary Statistic</b>	One of a variety of transformations used to characterize a data set (i.e., mean, standard deviation, etc.).
<b>Superfund</b>	USEPA's uncontrolled hazardous waste site program created by the Comprehensive Environmental Response and Liability Act.
<b>Surrogate Measure</b>	A demographic or environmental factor assumed to be representative of a second factor for which data are unavailable or less reliable (i.e., house value is often used as a surrogate measure for income).
<b>TIGER/line file</b>	TIGER is the acronym for the digital (computer-readable) geographic database that automates the mapping and related geographic activities required to support the Census Bureau's census and survey programs. The Topologically Integrated Geographic Encoding and Referencing data format is commonly used in GIS analyses.
<b>Title VI</b>	Title VI of the 1964 Civil Rights Act, 42 U.S.C. 2000(d) et.seq., as amended.
<b>Title VI Interim Guidance</b>	EPA's Interim Guidance For Investigating Title VI Administrative Complaints Challenging Permits," issued by EPA's Office of Civil Rights on February 5, 1998, defining key parameters for the Agency's processing of Title VI administrative complaints.
<b>Toxic Release Inventory</b>	The USEPA program which requires large-quantity generators of hazardous materials to report the nature and quantity of their annual emissions into the environment.
<b>Tract</b>	An expanse or area of land defined utilized in demographic studies by the

U.S. Census Bureau.

<b>Transient</b>	A person who is not expected to remain in a given location for an extended period of time.
<b>TRI</b>	USEPA Toxic Release Inventory
<b>TRIS</b>	USEPA Toxic Release Inventory System. The TRIS database is a major source of contaminant release information for EJ analyses.
<b>Uncontrolled Hazardous Waste Site</b>	A waste site in from which contaminants may migrate freely into the environment.
<b>Undocumented</b>	A citizen of a foreign country living in the U.S. without authorization of U.S. government immigration authorities.
<b>Variability</b>	The natural heterogeneity within a statistical population.
<b>Weighting Factor</b>	A factor used in a statistical analysis to represent the relative importance of an item in a population.
<b>Welfare Standard</b>	An established criterion developed to protect the health, happiness, and prosperity of a person, group or organization.

## **APPENDIX A. SPECIAL CONSIDERATIONS**

### **a. Introduction**

In spite of the need to develop consistent and comprehensive methodologies for EJ analyses, there will always be exceptions and situations that are not easily adaptable to a prescribed methodology. The two most common examples occur when:

- The population is homogeneous with respect to one of the EJ factors. In this Region, the clearest example of this is Puerto Rico, in which nearly the entire population is Hispanic, an identified ‘minority.’
- The source of exposure or risk is not a small area or discrete point (as in the case of non-point source surface runoff) or is really a combination of sources.

These and other related complex scenarios are explained in the following paragraphs.

### **b. Special Demographic Considerations**

In certain circumstances, a Community of Concern may be virtually indistinguishable from any of its neighbors for a given EJ demographic factor. The classic example in Region 2 is in Puerto Rico, where every community is classified as Hispanic, even though additional racial differences may exist. A related example would be a community that is not higher in minority representation than the reference communities when all minority groups are considered, but may have significantly greater minority representation when only a single minority group is considered.

#### **i. Population is Homogeneous for One Demographic Factor**

When the population in the larger area incorporating the Community of Concern is homogeneous for a given EJ demographic factor, it is not useful to compute a difference in that factor between the Community of Concern and the reference communities. It also would not make sense to exclude the possibility that a community could be an EJ Community simply because all of its neighboring communities share a given EJ factor. Therefore, in cases in which a factor is the same for the Community of Concern and reference areas, the policy is to document that the factor in question is canceled out and continue evaluating the remaining factors. In Puerto Rico, for example, the Hispanic factor would be canceled out, and the EJ assessment would be based on the outcome of the low-income factor, any other minority differences, and the disproportionate and adverse burden factor.

In Puerto Rico, for EJ screening analyses that may be related to agency enforcement actions, the entire Island should be treated as the reference area. The whole island, or even areas in the mainland, should also be used as the reference area(s) when the source of concern is a military installation, a commercial hazardous waste facility, or an experiment to demonstrate new and innovative technology (in the past, experiments with agent orange and birth control pills have been performed on the island). The decision maker may in such instances, on a case by case basis, use the mainland U.S. as the reference community or area.

#### **ii. Population has High Representation of a Specific Minority Group within an Overall Minority Community**



It is likely that there will be situations in which a Community of Concern has a significantly higher percentage of a *particular* minority group than do the reference communities, but does not have a significantly greater percentage of total minority representatives. In such a Community of Concern, that particular minority group may be treated separately, and the EJ assessment based on the relative representation of that group, irrespective of the relative percentages of minorities, in toto, in the communities.

For example, say there is a metropolitan area for which each local community has a total minority representation of about 50%, including the Community of Concern. However, in the Community of Concern, the Native American population constitutes about 40% of the total population, while in the reference communities, Native Americans constitute only about 20%, with other minority groups making up the rest of the minority populations. The Native American population in the Community of Concern would be twice the percentage in the reference communities. In this case, the Community of Concern would be judged to satisfy the Minority Population Decision-criterion for the Native American population, even though the overall minority percentages in the Community of Concern and reference communities are about the same.

This example demonstrates that an EJ assessment may be based on either the cumulative minority representation within a specific community or on the representation of a specific minority group within the community, regardless of the overall minority representation. The choice will usually be determined a priori by the circumstances surrounding the original decision to investigate that community.

### **c. Special Environmental Considerations**

Making an assessment about disproportionate and adverse environmental burden is a complex task requiring a series of decisions based on environmental data. This task is made even more complex when the sources of the burden are area-wide rather than point-based, or when a number of sources or parameters overlap. From a human health standpoint, the risks due to exposure from non-point sources are thought to be relatively low. From a cumulative exposure standpoint (see Section 4.e Cumulative Exposure), however, compounded exposures can and may have untold synergistic (or antagonistic) effects. To the extent possible or practicable, all known types of potential sources of exposure from point sources and non-point sources should be given some consideration in the decision making process.

In order to characterize potential exposures more accurately, unconventional exposure scenarios also need to be evaluated (i.e., sources other than single stationary industrial generators). EPA has been reasonably successful in regulating point source pollution largely because they are significantly easier to identify and target for control efforts. Controlling non-point source pollution, on the other hand, has met with limited success. Non-point sources by their very nature are diverse, and as the name would indicate, not generated from a single discrete area. Also, the site(s) of burden can be hundreds of miles away from the area where the pollutants originated. It is also not uncommon for these sources to cross contaminate media. Examples of non-point sources are:

- Air pollutants from mobile sources, fugitive emissions, and emissions from small or non-permitted facilities (e.g., dry cleaners).

- Water pollutants from storm water, urban and agricultural run-off, fugitive draining and groundwater contamination from waste sites.

#### **i. Air Quality Issues**

The geographic area of concern is liable to be subjected to any number of environmental threats to air quality from a variety of sources. As mentioned previously, the proximity of so-called “unconventional sources” should be taken into account to fully characterize possible exposure scenarios. These may include but are not limited to:

- Heavily traveled roads and highways
- High capacity parking lots (e.g., at stadiums or shopping malls)
- Toll plazas
- Airports
- Train and bus stations
- Cruise ship docks
- Industrial loading zones

While these sources can be readily identified during a careful inventory of the area, their burden is not easy to estimate or document. An even more difficult task lies in identifying the less obvious contributors to diminished air quality and estimating their potential health burdens, such as: dry cleaners, mismanaged construction areas, aerial pesticide application, outboard motors and lawn and garden treatments (note that these sources can affect water quality as well).

#### **ii. Water Quality Issues**

Non-point source water pollution is the largest contributor to the degradation of water quality in the country. Snowmelt or rainfall moving over land and through the ground picks up natural and manmade pollutants eventually depositing them into lakes, rivers, streams, wetlands, coastal waters, and groundwater resulting in potential health risks for populations using these water bodies for consumption, recreation, and subsistence fishing. Deposition of pollutants may also result in damage to surrounding ecosystems due, primarily, to bacterial contamination and eutrophication. Typical sources affecting water quality can include:

- fertilizers, herbicides and insecticides from agricultural and residential applications;
- oil, grease, salt and toxic chemicals from urban runoff and energy production;
- sediment from mismanaged construction sites, crop and forest lands, and eroding stream banks;
- salt from irrigation practices and acid drainage from abandoned mines;
- bacteria and nutrients from livestock, pet wastes and defective septic systems.

Few analytical techniques exist for determining the potential burdens or health hazards that may be associated with polluted runoff or air exposures (see Section 4.f. on Cumulative Exposure). One method for addressing the potential health risks from these sources is to employ the use of fate/transport or dispersion modeling. EPA’s Office of Health and Environmental Assessment in the Office of Research and Development has developed the Exposure Models Library (EML) and Integrated Model Evaluation System (IMES) on

compact disc.<sup>1</sup> Through the use of dispersion modeling and risk assessment, the potential burdens can be determined (depending on data quality) with a reasonable amount of confidence, assuming that the number, type, and size of the specific sources has been determined. This is not always a valid assumption.

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<sup>1</sup>The CD was developed to provide a more efficient means of distributing exposure models, associated documentation and a database of models used for exposure assessments in various media.

Over ninety (90) models are available on this CD which may be used for exposure assessments and fate/transport modeling. The model files contain source codes, sample input files, sample output files, and in some cases, model documentation in WordPerfect or ASCII format. The disc also contains the IMES database, with information on selecting an appropriate model, literature citations for model validation in actual applications and a demonstration of a model uncertainty protocol.

IMES was developed to assist in the selection and evaluation of exposure assessment models and to provide model validation and uncertainty information on various models and their applications. IMES is comprised of three (3) elements: a query system for selecting exposure models in various environmental media (Selection); a database containing validation and other information on applications of exposure models (Validation); and, a database demonstrating application of a model uncertainty protocol for simulations involving six (6) water models (Uncertainty).